

ABSTRACT OF THE DISCLOSURE

An adjustable fluid controlling assembly is provided which can be placed within a direct oxidation fuel cell system, in particular, in the cathode chamber of the fuel cell system. The cathode fluid controlling assembly can be employed to control the oxygen 5 that enters the cathode chamber, and to control the amount of water that is maintained within the cathode chamber. One embodiment of the fluid controlling assembly is a shutter assembly, which in a closed position maintains the water content within the cathode chamber sufficient to keep the catalyzed membrane well hydrated, even when the fuel cell is not operating. Automatic actuation can be provided which responds to an 10 operating characteristic of the fuel cell system. Another embodiment is includes using a gas impermeable material stretched across a hinged metal frame which can be opened and closed over the air breathing face of a direct oxidation fuel cell to close off the fuel cell